REMARKS/ARGUMENTS

I.   Status of Claims

Claims 1-26 are pending of which claims 1 and 14 are independent. Claims 1-26 have been amended. Applicants note with thanks that claims 5, 6, 18, 19, 22, 23 are indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and claims 7, 10, and 20 are indicated to be allowable if rewritten to overcome the rejections(s) under 35 U.S.C. § 112 2nd paragraph, set forth in this office action and to include all of the limitations of the base claims and any intervening claims.

II.   Rejections under 35 U.S.C. §112 Second Paragraph

Claims 7, 10, 24 and 25 are rejected under 35 U.S.C. § 112 second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Claims 7, 10, 24 and 25 have been amended to fully address the indefiniteness that the Examiner pointed out. Accordingly, Applicants kindly request that the rejection be withdrawn.

III. Rejections under 35 U.S.C. §103 (a)

Claims 1, 3, 8, 9, 11-14, 16, 21, 24 and 25 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 2003/0069033 to Edge et al. (hereinafter Edge). Applicants respectfully traverse this rejection.

Before discussing the differences between the present application and the cited reference, it is believed to be beneficial to first give a brief overview of Applicants' disclosure. In an asynchronous CDMA system, it is desirable to determine a mutual time difference of signals transmitted between two base stations (BS). Location measurement units (LMU) have been used for determining aforementioned mutual time difference. A typical way of using LMU to determine mutual time difference is to

sequentially measure timing difference of signals received from BS1 and BS2 and average the measurements. Nonetheless, such method has proven to be inaccurate, particularly when there is no direct time signal difference measurement between BS1 and BS2.

The Applicants' disclosed method is designed to improve the accuracy in determining aforementioned mutual timing difference and to overcome the problems described above with respect to not having direct time signal difference measurement between two base stations.

Claim 1, as amended, recites a method for determining a mutual time difference of signals transmitted between a first base station and a second base station in an asynchronous code division multiplexing access (CDMA) system, the asynchronous CDMA system having at least one other base station and forming at least three pairs of two adjacent base stations. The method comprises the steps of:

> (a) for each pair of the at least three pairs of two adjacent base stations, measuring time difference of signals transmitted between two adjacent base stations of said pair, obtaining <u>an adjusted time difference corresponding to said pair</u>, and obtaining an accuracy of the adjusted time difference;

> (b) <u>determining a set of all possible paths between said first base station and said second base station, wherein each path of said set of all possible paths comprises at least one pair of two adjacent base stations</u>; and

> (c) <u>providing weights to the obtained adjusted time differences corresponding to pair(s) of two adjacent base stations included in each path of said set of all possible paths.</u>
> (emphasis added).

Claim 14, as amended, contains similar recitations to claim1. To be more specific, claim 14 recites a timing system comprising a plurality of LMUs and a mobile user location center. The LMUs are recited as each performing step (a) of claim 1, whereas the mobile user location center is recited as performing steps (b) and (c) of claim 1.

Although the cited reference Edge is also directed to a timing method in a wireless communication network, it does not disclose, teach or suggest the claimed method. Specifically, the method disclosed in Edge has no relevance to determining a mutual time difference of signals transmitted between a first base station and a second base station. Instead, the method is primarily concerned with generating association data associating actual timing information derived in a mobile terminal with base station timing information maintained by the base station. See abstract, claim 1 of Edge, paragraphs [0014], [0025] and [0073]. More specifically, it appears that different association data, regardless which base station an association data is associated with, are relative to only an accurate time, e.g., a GPS time, as exemplified in Fig. 4 of Edge. Also see paragraph [0025]. Hence, the association data featured in Edge is very different from an adjusted time difference corresponding to one pair of two adjacent base stations, as similarly recited in claim 1, in that the association data is not derived from timing information concerning two adjacent base stations, but instead is derived from timing information concerning one base station and one fixed timing source reflecting an actual time, such as GPS.

Accordingly, Edge does not disclose, teach, or suggest step (a) as recited, namely, for each pair of the at least three pairs of two adjacent base stations, measuring time difference of signals transmitted between two adjacent base stations of said pair, obtaining an adjusted time difference corresponding to said pair, and obtaining an accuracy of the adjusted time difference.

Further, nowhere does Edge disclose, teach, or suggest step (b) as recited, namely, determining a set of all possible paths between said first base station and said second base station, wherein each path of said set of all possible paths comprises at least one pair of two adjacent base stations. In fact, Edge does not disclose, teach, or suggest anything remotely relevant to determining possible paths between a first base station and a second base station.

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Finally, nowhere does Edge disclose, teach, or suggest step(c) as recited, namely, providing weights to the obtained adjusted time difference(s) corresponding to pair(s) of two adjacent base stations included in each path of said set of all possible paths.

The Examiner refers to LMU disclosed in paragraph [0008] and central authority 110 disclosed in paragraph [0035] and Fig. 1 as disclosing steps recited in claim 1. In addition, the Examiner relies on paragraph [0073] as disclosing providing weights to the obtained timing differences. Applicants respectfully disagree with the above assessment by the Examiner.

With respect to LMU disclosed in paragraph [0008], LMU is only disclosed for the purpose of later showing how Edge's method does not need LMU to accomplish its synchronization goal. See paragraph [0011]. As such, Edge teaches away from the claimed method in that step (a) of the claimed method can be performed in LMU while Edge expressly disclaims the use of LMU in its featured timing scheme. Further, paragraph [0008] at best discloses general functions of an LMU and lacks the specifics recited in step (a), such as obtaining an adjusted time difference corresponding to said pair, and obtaining an accuracy of the adjusted time difference. Accordingly, LMU disclosed in paragraph [0008] cannot be construed as disclosing step (a) of claim 1.

Similarly, central authority 110 is merely shown to have the function of maintaining the association data associating actual timing information derived in a mobile terminal with base station timing information maintained by the base station. See paragraph [0035]. The disclosed function, however, is not the same as steps (b) and (c) of claim 1, since association data is different from an adjusted time difference and the function does not involve determining a set of all possible paths between said first base station and said second base station. Accordingly, central authority 110 cannot be construed as disclosing steps (b) and (c) of claim 1.

Finally, with respect to paragraph [0073], it merely discloses combining, averaging, and weighting timing associations for one base station for the purpose of taking into better timing association accuracy in area with clear GPS satellite visibility. Such disclosure, however, aside from the general principle of combining, averaging and weighting pieces of data, does not touch the substance of steps (b) and (c) as recited. This is because the disclosure does not teach determining a set of all possible paths between said first base station and said second base station, and additionally, timing associations (association data), the weighted objects are different from obtained adjusted time difference(s) corresponding to pair(s) of two adjacent base stations included in each path of said set of all possible paths, the weighted objects according to claim 1.

Accordingly, since Edge fails to disclose, teach, or suggest each of the limitations of independent claim 1, as discussed above, claim 1 is allowable over Edge and thus the rejection should be withdrawn. Claim 14 has similar recitations to claim 1. Accordingly, for at least the same reasons stated above in connection with claim 1, the rejection of claim 14 should also be withdrawn. Rejection of claims 8, 9, 11-13, 16, 21, 24 and 25 should similarly be withdrawn by virtue of their dependence from allowable claims 1 and 14 respectively.

A. Claims 2 and 15

Claims 2 and 15 are rejected under 35 U.S.C. §103(a) as being unpatentable over Edge in view of U.S. Publication No. 2003/0007470 to Grilli et al. (hereafter Grilli).

Claims 2 and 15 depend from independent claims 1 and 14 respectively and thus inherits all limitations of the independent claims. Grilli, however, is merely cited secondarily for disclosing common pilot channel, and does not overcome the deficiency of the independent claims. Accordingly, Applicants need not further discuss Grilli with respect to the patentability of claims 2 and 15, and claims 2 and 15

are allowable over Edge in view of Grilli. Accordingly, rejection of claims 2 and 15 must be withdrawn.

B. Claims 4 and 17

Claims 4 and 17 are rejected under 35 U.S.C. §103(a) as being unpatentable over Edge in view of U.S. Patent No. 6,034,635 to Gilhousen.

Claims 4 and 17 depend from independent claims 1 and 14 respectively and thus inherits all limitations of the independent claims. Gilhousen, however, is merely cited secondarily for disclosing showing accuracy by means of signal to noise ratio, and does not overcome the deficiency of the independent claims. Accordingly, Applicants need not further discuss Gilhousen with respect to the patentability of claims 4 and 17, and claims 4 and 17 are allowable over Edge in view of Gilhousen. Accordingly, rejection of claims 4 and 17 should be withdrawn.

IV. Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 5, 6, 18, 19, 22 and 23 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and claims 7, 10, and 20 would be allowable if rewritten to overcome the rejections(s) under 35 U.S.C. § 112 2nd paragraph, set forth in this office action and to include all of the limitations of the base claims and any intervening claims.

Claims 7, 10 and 20 have been amended to fully address the indefiniteness that the Examiner pointed out. Accordingly, the rejection of claims 7, 10 and 20 under 35 U.S.C § 112 second paragraph are believed to have been overcome, and Applicants respectfully submits that claims 7, 10 and 20 are in condition for allowance.

Applicants believe that claims 5, 6, 18, 19, 22 and 23, which have all been amended, are in condition for allowance in their current dependent form by virtue of their dependence from allowable claims 1 and 14 respectively. Accordingly,
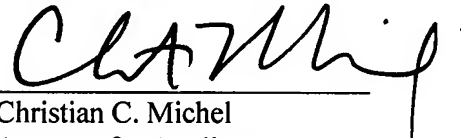
Applicants respectfully hold amending these claims into dependent form in abeyance until the Examiner has had an opportunity to consider the above comments.

V. Conclusion

In view of the above, it is believed that the application is in condition for allowance and notice to this effect is respectfully requested. Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the telephone number indicated below.

Should any/additional fees be required, the Director is hereby authorized to charge the fees to Deposit Account No. 18-2220.

Respectfully Submitted,

Christian C. Michel
Attorney for Applicant
Reg. No. 46,300

Roylance, Abrams, Berdo & Goodman, L.L.P.
1300 19th Street, N.W., Suite 600
Washington, D.C. 20036
(202) 659-9076

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